

Uptime/Availability

Peter Ingrassia

RHIC Retreat

June 16, 2005

The Presentation

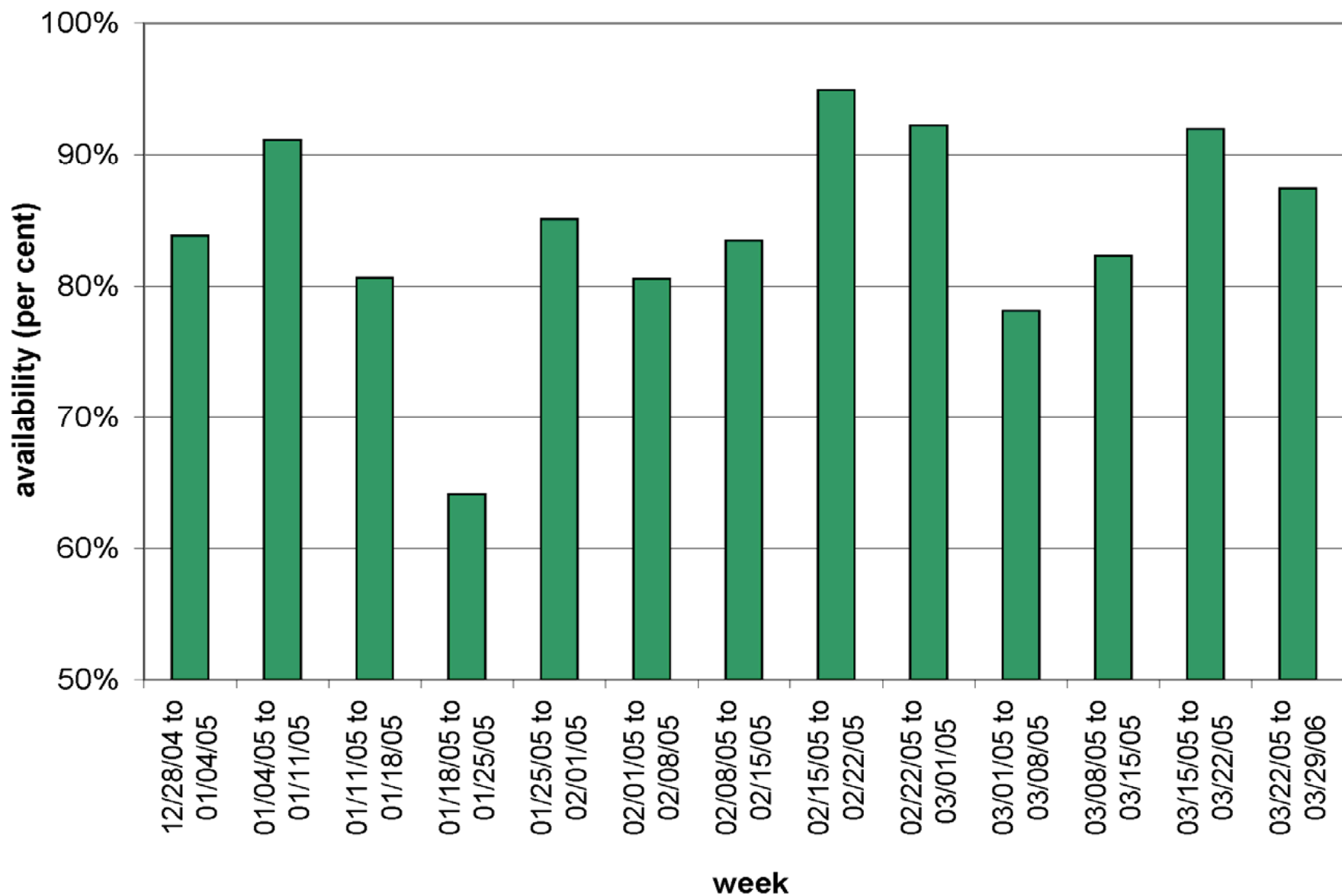
- Some good news – Run 5 Availability
- Run5 vs Run4 vs Run3
- Where improvements are needed – Failures
- A word about Maintenance

Some good news that is old news

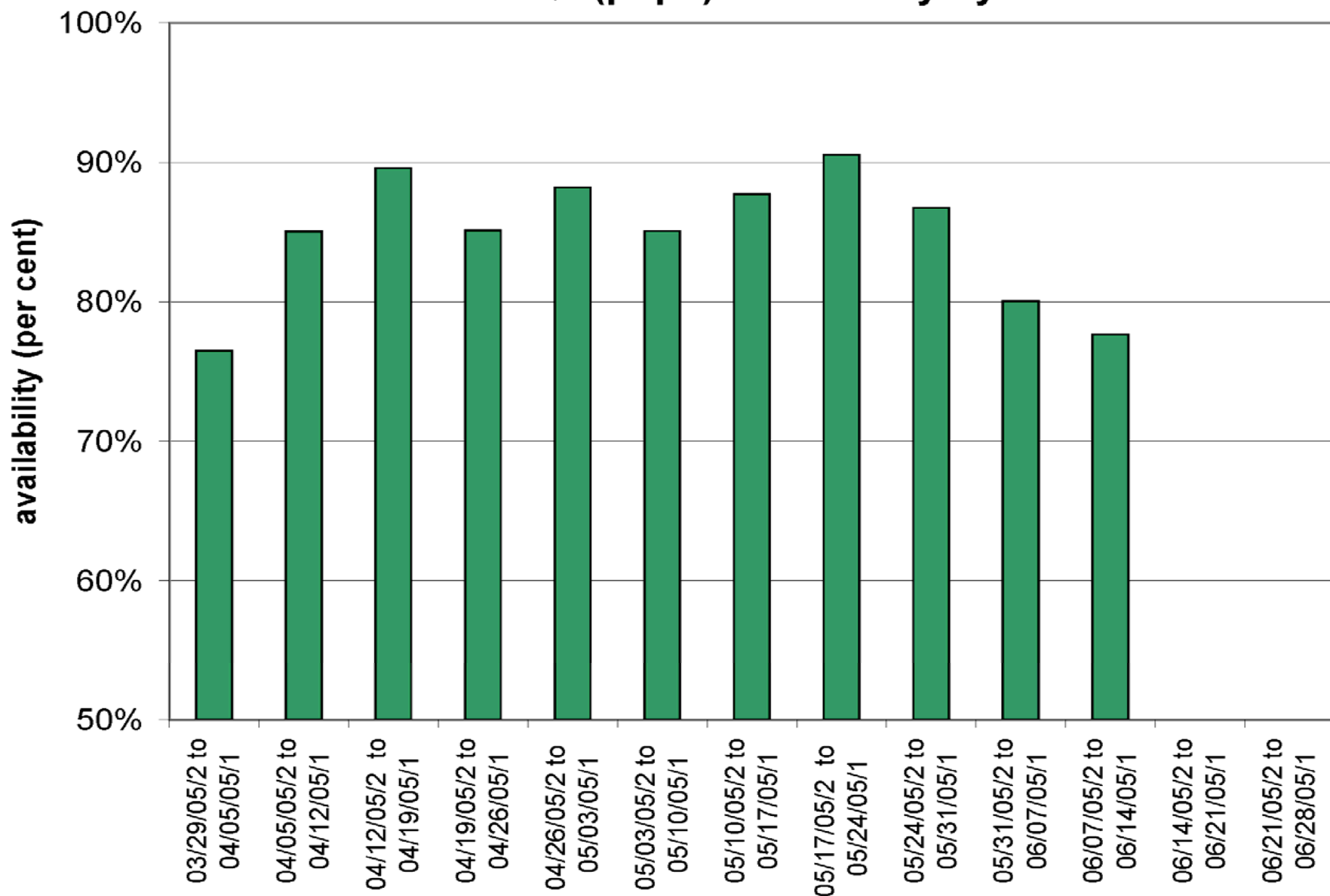
Run5 Availability

DOE Metric is 80% availability

RHIC Run5 FY05Q2 (CuCu) Percent Availability by Week



RHIC Run5 FY05Q3 (p^p^)^ Availability by Week



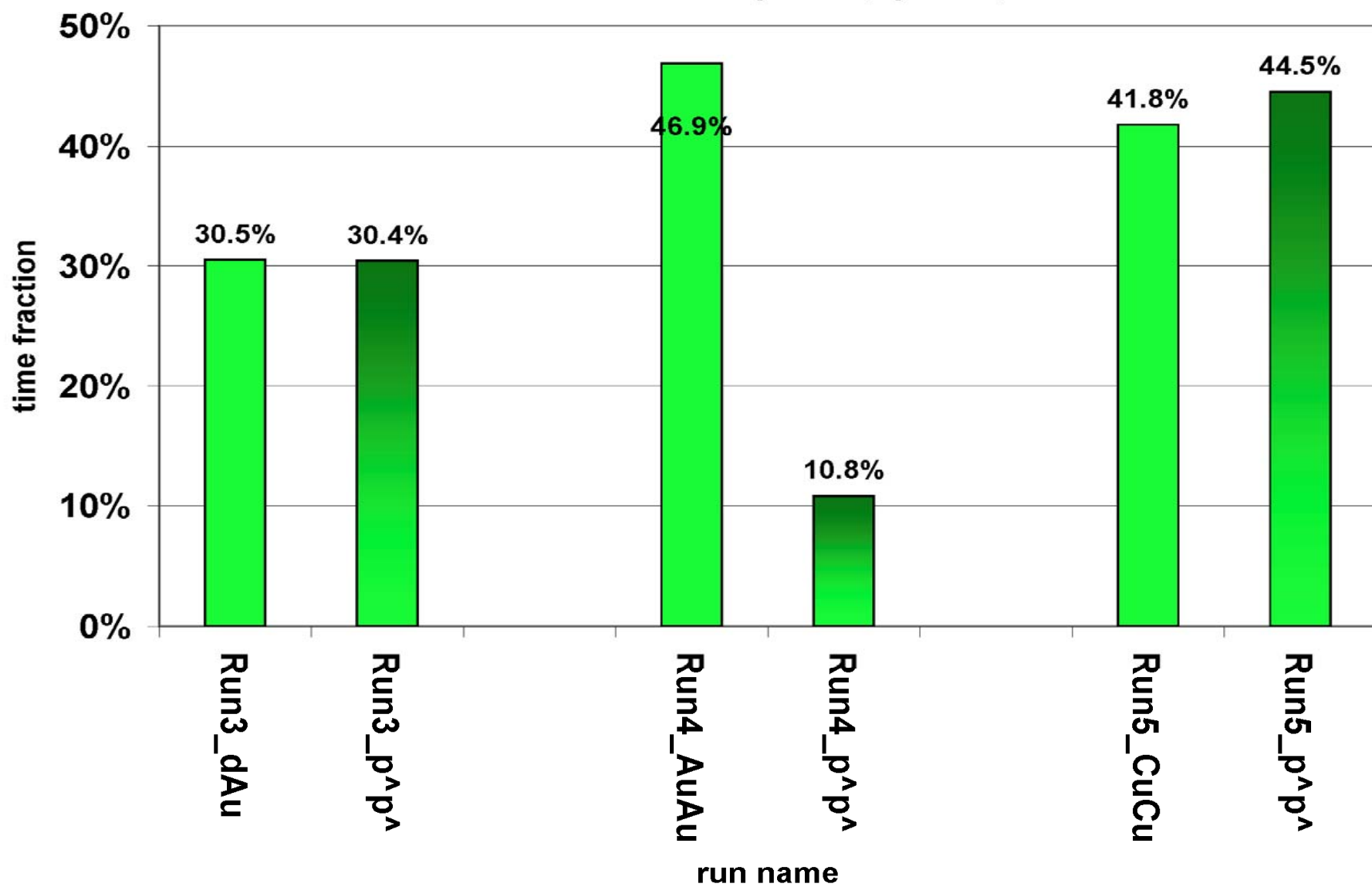
Run5 vs. Run4 vs. Run3

Physics, Setup, Failure, etc.

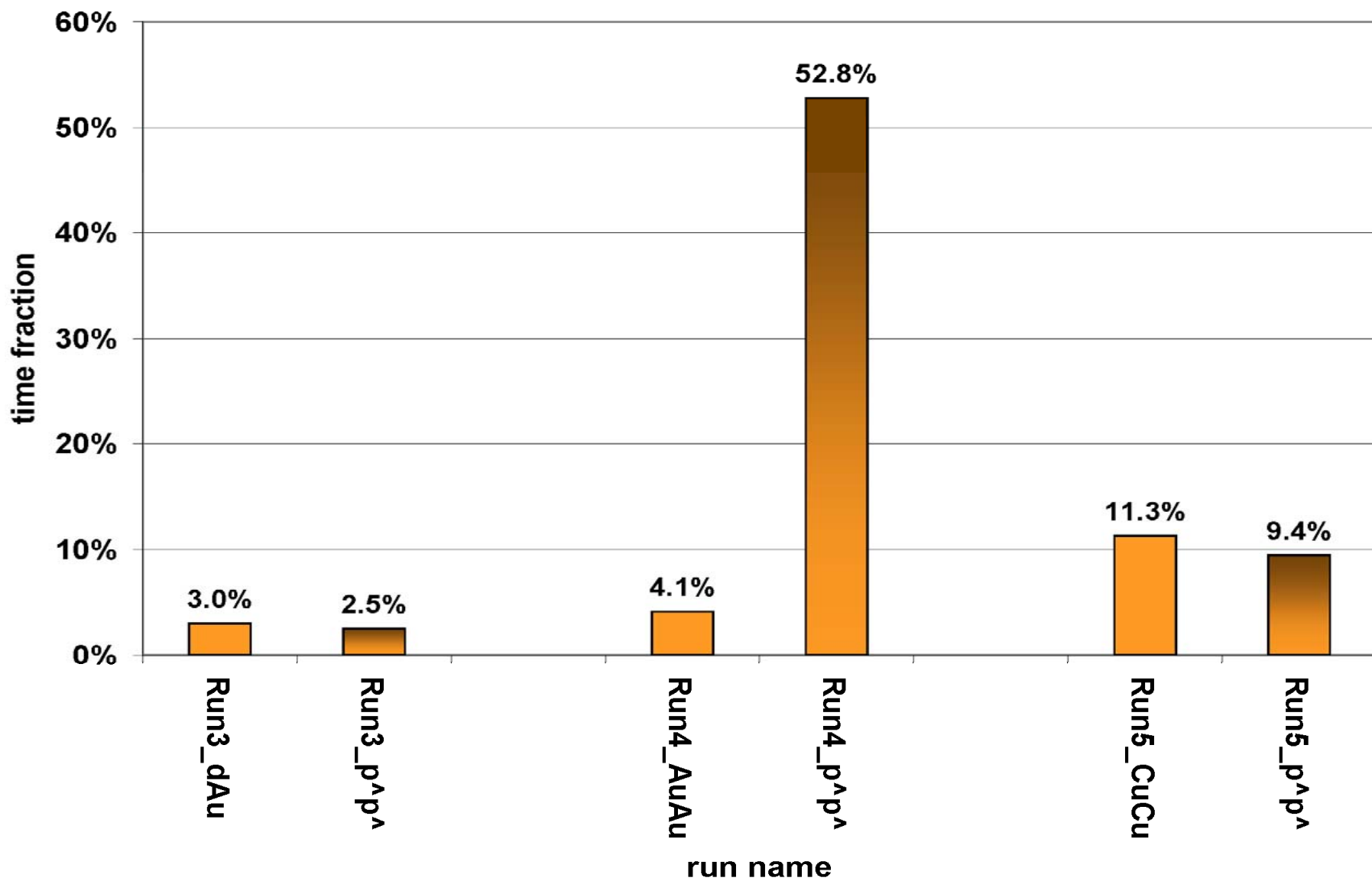
Look at the period from the start to the end of physics for the last 3 runs.

- Normalize by the number of scheduled hours for that period
- Run4p^p^ -- engineering run

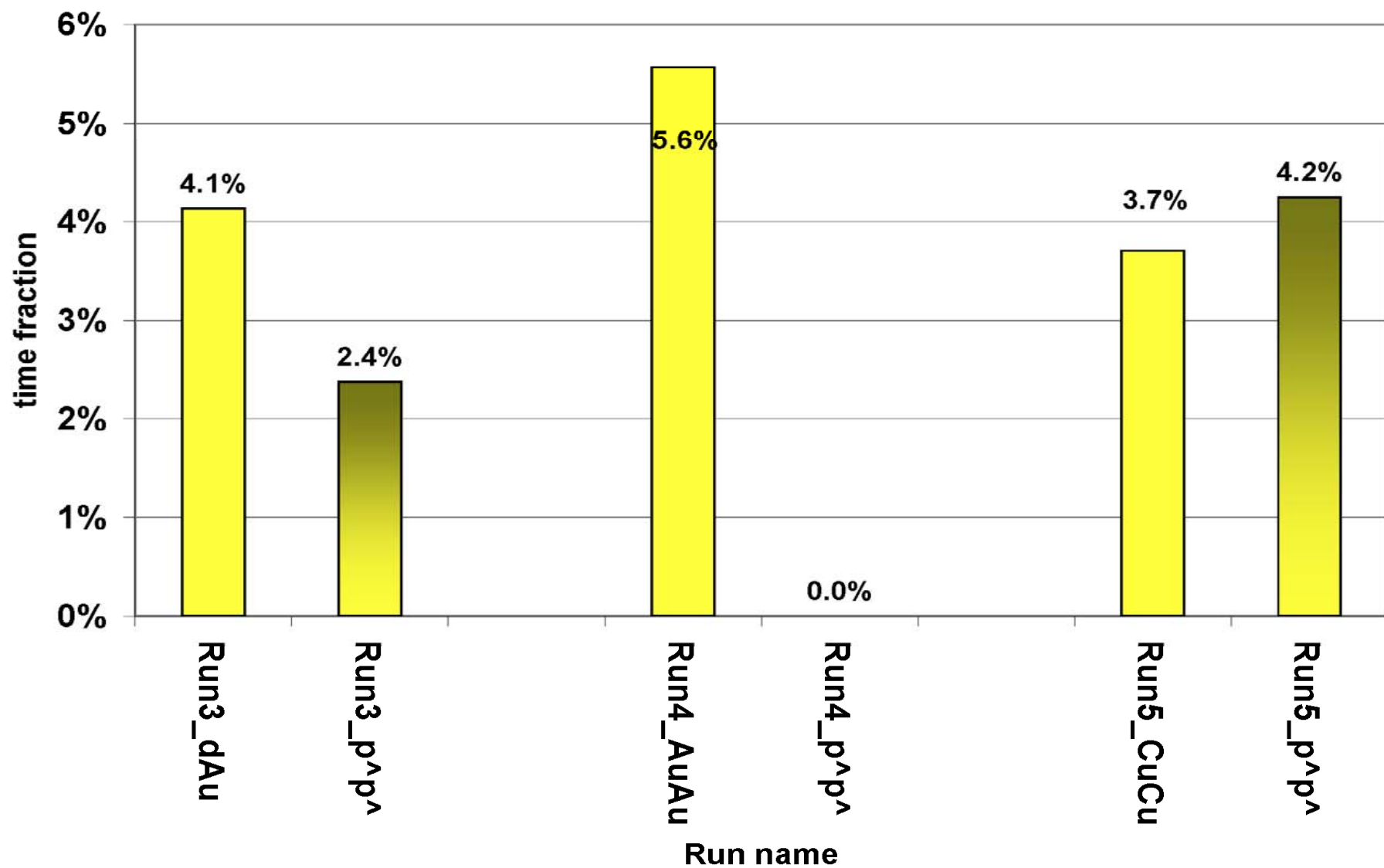
Fraction of Time in Physics (by Run)



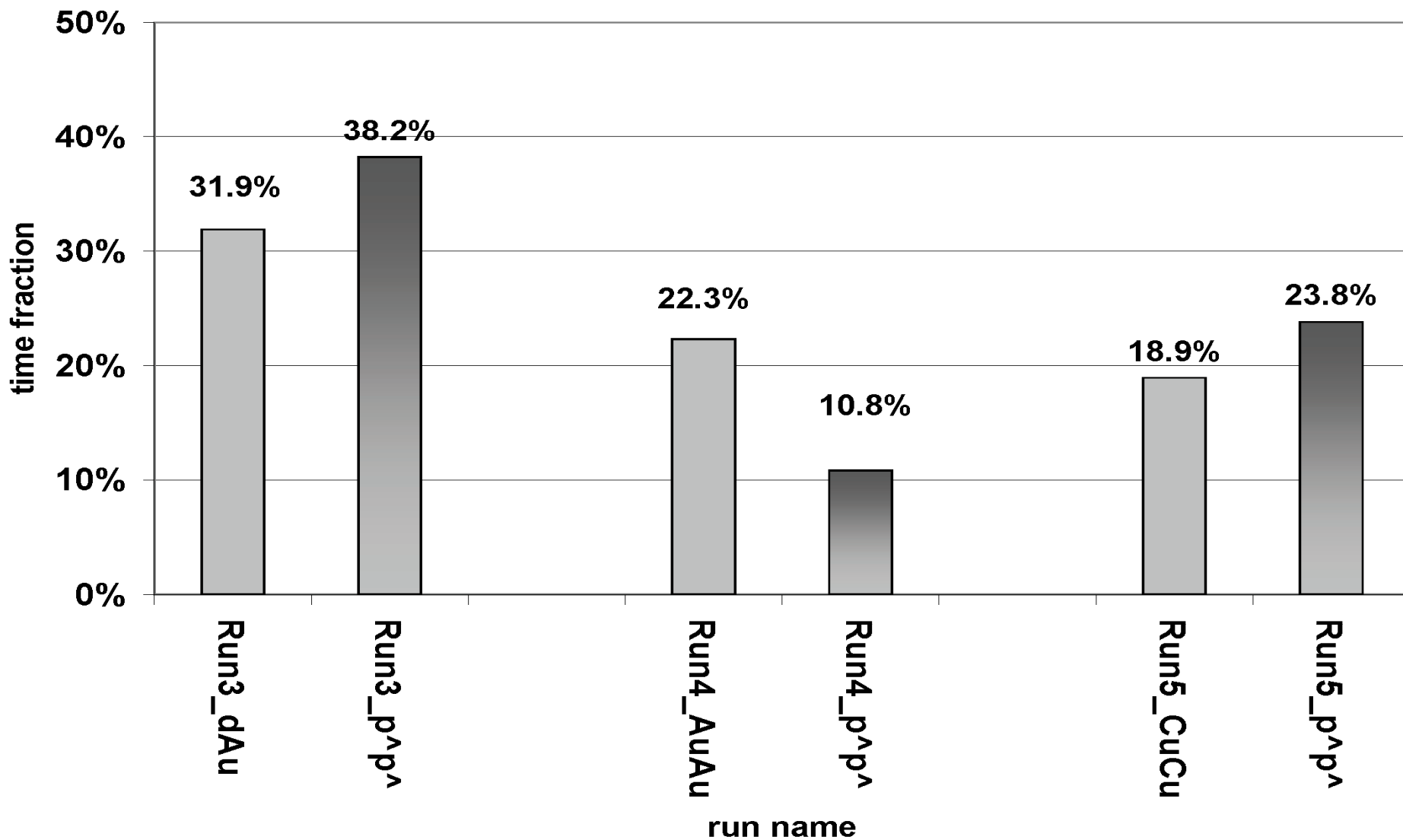
Fraction of Time in Machine Development (by Run)



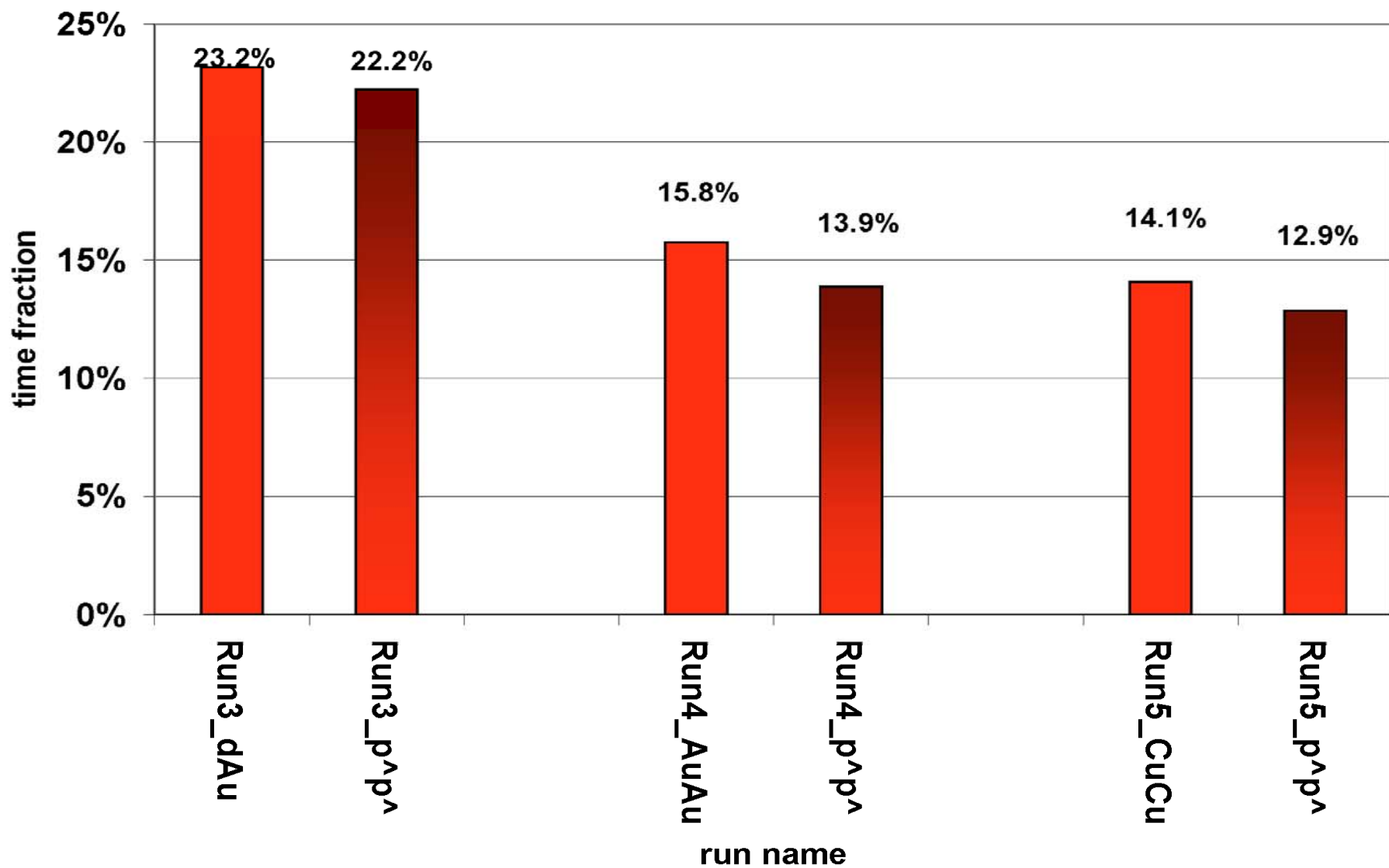
Fraction of Time in Accelerator Physics (by Run)



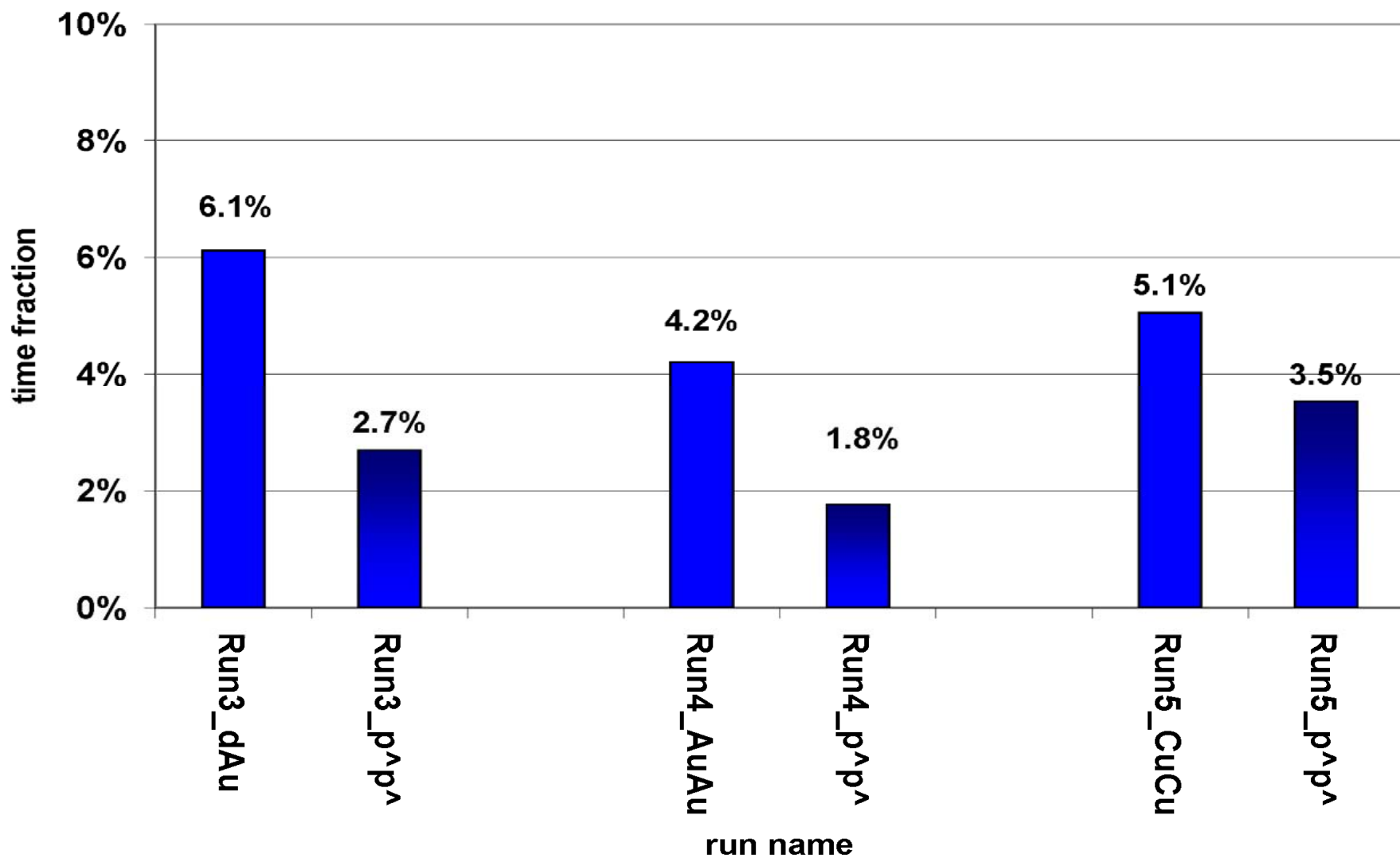
Fraction of Time in Machine Setup (by Run)



Fraction of Time in Failure (by Run)



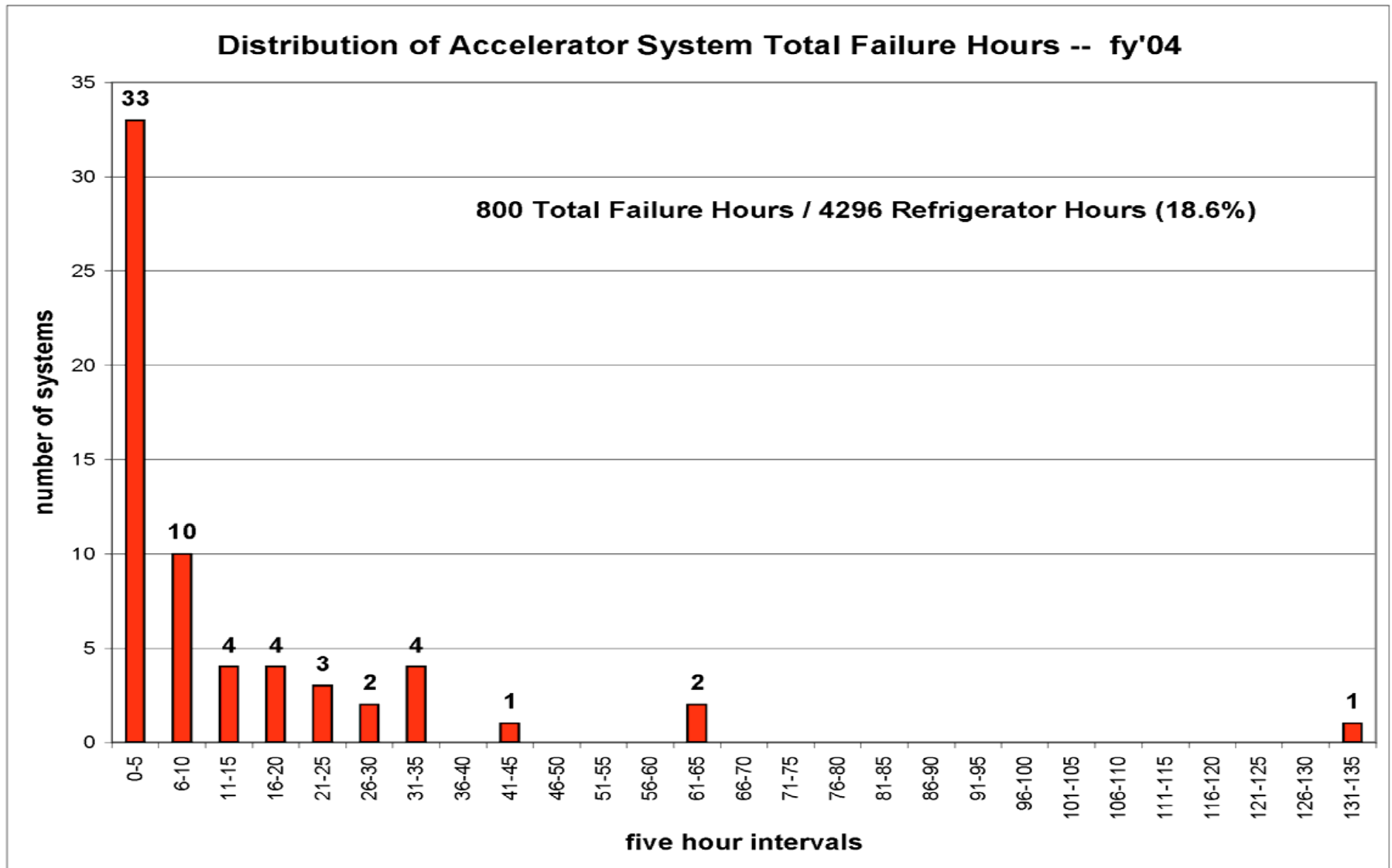
Fraction of Time in Maintenance (by Run)



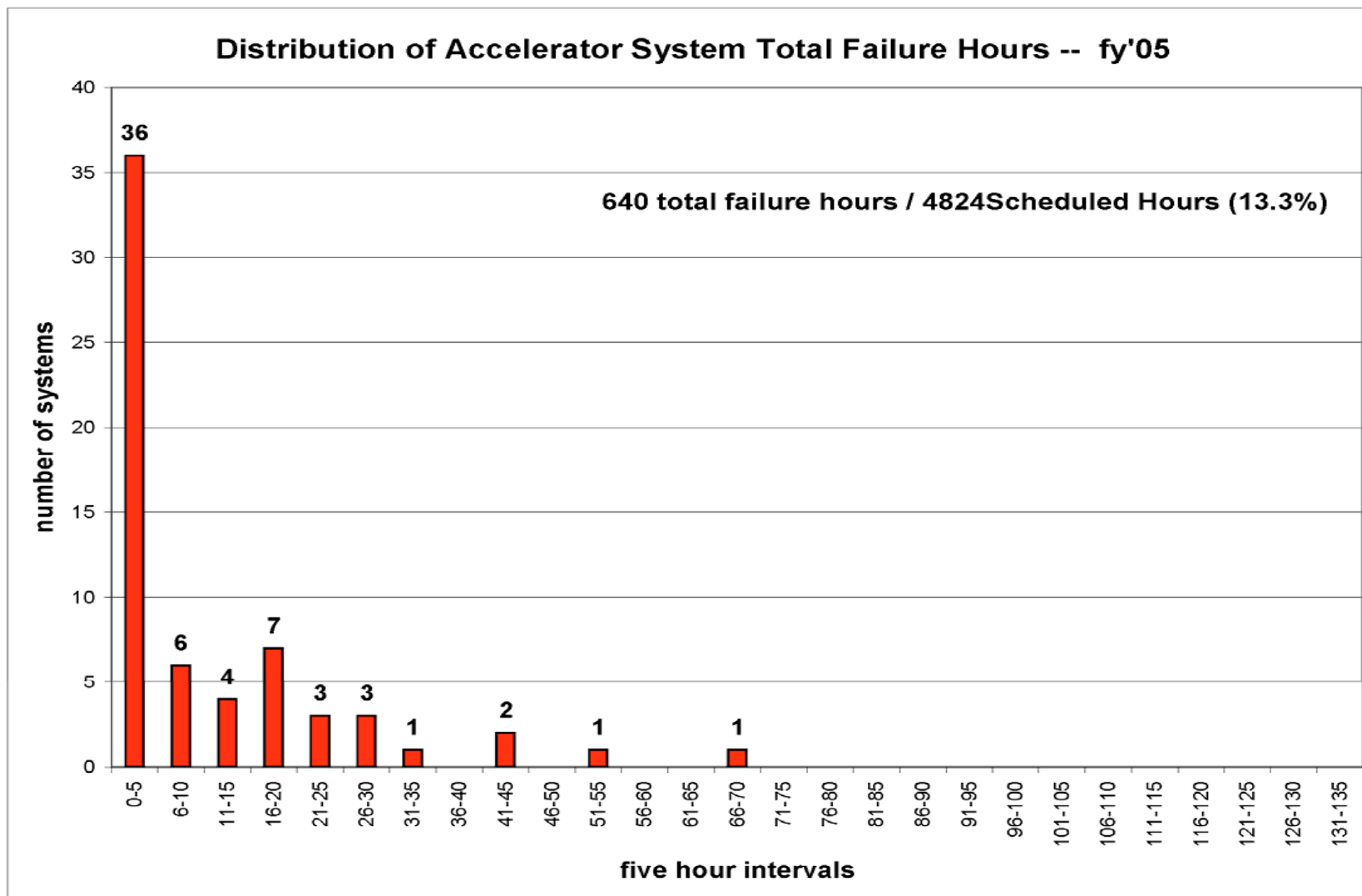
Failure Statistics

- Look over the “whole run” ~ refrigerator hours
- Given failure hours by system – determine which 5 hour bin the system belongs in
- Find the top ten offenders
- Run4 – JMB presented at last retreat
- Run5– distribution looks the same

Failure Statistics – Run 4



Failure Statistics – Run 5



Top 10 List (Systems with the most failure hours)

FY04

- Controls 135
- Quench 66
- Cryogenic 66
- RHIC Rf (blue) 42
- QPA/QD 34
- Electrical Service 35
- RHIC PS (blue) 31
- TMP7 30
- RHIC MMPS (yellow) 30
- RHIC Rf (yellow) 29

FY05

- Controls 69
- RHIC PS (blue) 50
- QPA/QD 43
- Cryogenic 41
- Operator Error 33
- Access Controls 30
- AGS_Rf 27
- Quench 26
- Radiation Interlock 23
- Water Service 23

Observations

- Most Systems do just fine
- Reliability Improvements can still be made
 - Controls – file server crashes
 - Power Supplies – IR power supplies
 - Quench Protection/Quench Detection
 - Cryogenic – Lead Flows + PLCs

Maintenance – Impacts Uptime

- Need Discipline to LIMIT the work
- Legitimate work to be done
 - Next run (NASA-AGS)
 - Plan for Summer shutdown etc.
- Old Filter – Maintenance Coordinator & Scheduling Physicist (SP) – not good enough
- New filter adds Run Coordinator and gets Head of Operations involved
- Need someone (not SP) to filter for jobs driven by physicists (MacKay, Huang, Hseuh)

Maintenance

- If maintenance schedule is to be decided at Monday scheduling meeting then someone familiar with the TOTAL list of work needs to be at the meeting – not SP
- Increased commitment to recover machines first
- Unavoidable Delays are reported (HOO)
- Avoidable Delays are Scheduled (SP)